WE CLAIM:

1. A switching inverter, comprising:

a first primary winding connected in series to a first switch and a DC voltage source;

a second primary winding connected in series to a second switch and the DC voltage source;

wherein the first primary winding and the second primary winding include ribbon-like conductors each having a thickness RIBBONTHICKNESS;

wherein a first coil segment of the first primary winding and a second coil segment of the second primary winding are wound coaxially around a transformer core;

wherein the first winding and the second winding are approximately parallel separated by a dielectric layer, and the distance between the cross-sectional centroid of the first winding and the cross-sectional centroid of the second winding is not greater than 2xRIBBONTHICKNESS, and wherein each of the ribbon-like conductors has an aspect ratio of at least 100.

2. The inverter of claim 1, wherein RIBBONTHICKNESS is not greater than one half of one millimeter.

3. The inverter of claim 2, wherein each of the ribbon-like conductors has an aspect ratio of at least 200.

4. The inverter of claim 3, wherein RIBBONTHICKNESS is less than 0.5 mm.

5. The inverter of claim 1, wherein each of the ribbon-like conductors has an aspect ratio of at least 300.

6. The inverter of claim 1, wherein the first switch is a first composite switch and the second switch is a second composite switch, wherein each of the first and second composite switches comprises a plurality of packaged semiconductor switches that are mounted on a printed circuit board and electrically connected to patterned foil conductors in a patterned foil layer of the printed circuit board, wherein the patterned foil layer is at least 1 mm thick.

7. The inverter of claim 6, wherein the composite switches are able to continuously switch more than 300 amps of current at a switching frequency of at least 10kHz.

8. The inverter of claim 1, wherein the inverter is adapted to output more than 3,000 watts of filterably pure-sine-wave AC power.

9. The inverter of claim 1, wherein the inverter is adapted to output more than 5,000 watts of filterably pure-sine-wave AC power.

10. The inverter of claim 1, wherein the inverter is adapted to output 10,000 watts or more of filterably pure-sine-wave AC power.

11. The inverter of claim 1, wherein the first switch and the second switch are controlled by sinewave-modulated pulse-width-modulated (PWM) switch-control signals.

12. The inverter of claim 11, wherein the switching inverter is adapted to operate continuously at a switching frequency higher than the human audible frequency range.

13. The inverter of claim 12, wherein the inverter is adapted to continuously output at least 5,000 watts of filterably pure-sine-wave AC power.

14. The inverter of claim 10, wherein the inverter is enclosable within an enclosure having a volume of 2240 cubic inches.

15. The inverter of claim 10, wherein the inverter has a DC-to-AC power conversion efficiency is equal to or greater than 80 percent.

16. The inverter of claim 1, wherein the inverter can operate continuously at an AC power density not less than 3.0 Watts per cubic inch.

17. The inverter of claim 13, wherein the inverter has an AC power density of at least 4.0 Watts per cubic inch.

18. The inverter of claim 1, wherein the inverter can operate continuously at an AC power density not less than 4.0 Watts per cubic inch.

19. The inverter of claim 1, wherein the inverter can operate continuously at an AC power density not less than 6.0 Watts per cubic inch.

20. A fluid-cooled heat sink for cooling a heat generating component in contact therewith, comprising:

a fluid conduit having a substantially uniform wall thickness and a substantially uniform perimeter P formed from a thermally conductive material and having a contact segment, wherein the contact segment has a first flat exterior surface, and wherein the first flat exterior surface has a height H1, wherein the height H1 is approximately equal to or greater than P/π.

21. The heatsink of claim 20, wherein the height H1 is approximately equal to or greater than the diameter D of a cylindrical pipe having circumference P.

22. The heatsink of claim 20, wherein the height H1 is approximately equal to or greater than about 115% of the diameter D of a round pipe having circumference P.

23. The heatsink of claim 20, wherein the contact segment is disposed between at least one of an inlet portion and an outlet portion, and wherein at least one of the inlet portion and the outlet portion includes a cylindrical pipe having circumference P.

24. The heatsink of claim 23, wherein at least one of the inlet portion and the outlet portion further includes a transition portion abutting the contact segment, wherein the transition portion has a length that is less than 130% of the diameter D of the cylindrical pipe having circumference P.

25. The heatsink of claim 20, wherein the contact segment of the fluid conduit further has a second flat exterior surface which is substantially parallel with said first flat exterior surface.

26. An assembly comprising

a fluid conduit having substantially uniform wall thickness and a substantially uniform perimeter P formed from a thermally conductive material and having a contact segment, wherein the contact segment has a first flat exterior surface, and wherein the first flat exterior surface has a height H1, wherein the height H1 is approximately equal to or greater than P/π; and

a clamping device adapted to hold the planar surface of a heat generating component in contact with the first flat exterior surface of the conduit.

27. The assembly of claim 26, wherein clamping device includes a binder-clip.

28. An assembly comprising:

a fluid-cooled linear heat sink in thermally conductive abutting contact with each heat-generating electronic component of a plurality of heat-generating electronic components aligned in at least one row, the linear heat sink having a first flat exterior surface abutted to a flat side of each component aligned in the at least one row.

29. The assembly of claim 28, wherein the heat-generating components of the plurality of heat-generating components are aligned in two parallel rows, the linear heatsink being disposed between the two parallel rows of the heat-generating components.

30. An inverter comprising:

an inductor core;

a transformer including;

a transformer core;

a first coil wound around the transformer core;

a second coil wound around the transformer core and around the inductor core.

31. The inverter of claim 30 wherein the inductor core is implemented in a first inductor core portion and a second inductor core portion, the first and second inductor core portions being physically separated from each other, and the second coil is wound around the transformer core and around first and the second inductor core portions.

32. The inverter of claim 30, wherein the first coil is a primary winding of the transformer and the second coil is a secondary winding of the transformer.

33. A switching inverter, comprising:

a transformer including:

a first primary winding conductor connected in series to first switch and a DC voltage source;

a second primary winding conductor connected in series to a second switch and the DC voltage source;

wherein the first primary winding conductor and the second primary winding conductor respectively comprise a first plurality of parallel wire conductors and a second plurality of parallel wire conductors, each plurality of parallel wire conductors being intertwined with the other to form a litz-wire dual primary winding, the litz-wire dual primary winding being wound around the core of the transformer.

34. The inverter of claim 33, wherein first plurality of parallel wire conductors and the second plurality of parallel wire conductors are twisted together.

35. The inverter of claim 33, wherein every conductor of the first plurality of parallel wire conductors is adjacent to a wire conductor of the second plurality of parallel wire conductors.

36. The inverter of claim 35, wherein every conductor of the first plurality of parallel wire conductors is twisted around a

wire conductor of the second plurality of parallel wire conductors to form the litz-wire dual primary winding as a plurality of twisted-pairs.

37. The inverter of claim 33, wherein the litz-wire dual primary winding has a substantially rectangular cross-sectional perimeter.

38. An inverter, comprising:

a first primary winding conductor connected in series to a first sinewave-modulated pulse-width-modulated (PWM)-controlled switch and a DC voltage source, the first switch being a first composite switch including a first plurality of semiconductor switches mounted in at least one row on a first portion of printed circuit-board;

a second primary winding conductor connected in series to a second sinewave-modulated PWM-controlled switch and the DC voltage source, the second switch being a second composite switch including a second plurality of semiconductor switches mounted in at least one row on a second portion of a printed circuit-board;

wherein the first primary winding and the second primary winding have a minimized uncoupled inductance such that more than 100 amperes of current in the primary windings can be switched perpetually at frequencies greater than 2,000 Hz by the PWM-controlled switches.

39. The inverter of claim 38, further comprising a fluid-cooled linear heat sink in thermally conductive contact with the first plurality of semiconductor switches, the heat sink having a flat side abutted to a flat side of each semiconductor switch of the first plurality of semiconductor switches.

40. The inverter of claim 38, wherein the semiconductor switches of the first plurality of semiconductor switches are mounted in two parallel rows on the first portion of printed circuit-board, and wherein the linear heat sink is in thermally conductive contact with the semiconductor switches of the first plurality of semiconductor switches in both of the two parallel rows.

41. A method for forming a linear fluid-cooled heat sink having two flat sides, the method comprising:

providing a linear fluid conduit having substantially uniform wall-thickness within each of two side areas and a substantially uniform crossectional perimeter P;

providing a anvil having two flat surfaces inside of the linear fluid conduit and between the two side areas;

pressing each of the two side areas of the fluid conduit against the flat surfaces of the anvil so as to form the two flat sides.

42. The method of claim 41, wherein providing the anvil includes assembling a composite anvil inside of the linear fluid conduit.

43. The method of claim 41, wherein assembling a composite anvil inside of the linear fluid conduit includes inserting a plurality of wedges inside of the linear fluid conduit, each wedge having two flat surface areas, one flat surface area of each of the plurality of wedges being joined inside of the linear fluid conduit in a co-planar manner to form one of the two flat surfaces of the composite anvil, the other flat surface area of each of the plurality of wedges being joined inside of the linear fluid conduit in a co-planar manner to form the other one of the two flat surfaces of the composite anvil.

44. The method of claim 43, wherein the plurality of wedges includes three wedges.

45. The method of claim 43, wherein the two flat surfaces are substantially parallel to each other and the two flat sides are substantially parallel to each other.

46. The method of claim 43, wherein both of the two flat surfaces of the composite anvil have a height that is equal to or greater than P/π.

47. The method of claim 46, wherein both of the two flat surfaces of the composite anvil have a height that is equal to or greater than 115% of P/π.